COST AND MANAGEMENT

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Mr. Mulle is Assistant Controller of the S. Morgan Company, York, Pennsylvania. He is a graduate of the University of Kentucky, a certified public accountant in Pennsylvania, and a member of the National Association of Cost Accountants and of the American Institute of Accountants. His varied business experience has been gained through service with R.C.A. Manufacturing Company, Inc., Camden, New Jersey and with the public accounting firm of Haskins & Sells in Philadelphia.

Carl A. Gerstacker is Vice-President and Treasurer of Dow Chemical Company. This address was presented before a joint meeting of the Detroit Chapter of the National Association of Cost Accountants and the Windsor Chapter of the Society of Industrial and Cost Accountants of Ontario in Detroit on February 18, 1957.

A graduate of the Wharton School of Finance and Commerce of the University of Pennsylvania, Mr. Harrington is Systems and Procedures Supervisor of Spencer Kellogg and Sons, Inc., Buffalo, New York. Prior to this he served as Cost Control Supervisor of Trico Products Corporation and Plant Controller of National Gypsum Co. Mr. Harrington has been a member of the National Association of Cost Accountants since 1951 and an Association Director, 1954-56.

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Editorial Comment . . .

ARTISTS, ACCOUNTANTS AND BROADCASTING

To writers and artists the tidy mind of the accountant and the humble virtues of his double entry bookkeeping are best portrayed, if at all, as a symbol of the unimaginative. Beverly Baxter, that indefatigable MacLean's correspondent, furnishes an illustration in a recent article. Piqued at the patronizing manner in which he considers the recently published diary of Viscount Alanbrooke, Churchill's chief military adviser during the war, treats that illustrious peer, Baxter dismisses Alanbrooke as "the field marshall with the face and mind of an extremely able chartered accountant."

Standing by itself, this unfortunate simile would not seem too significant. But it does not stand by itself. Last January the judges for the Sylvania Television Awards in the U.S. in their annual report, after concluding that television has prematurely reached a plateau of stagnant middle age, cautioned, "If this trend continues, the judges fear that the creative mind in television might be replaced with the accounting mind."

All this is very distressing to accountants. They will be further distressed by the findings of the Report of the Royal Commission on Broadcasting. It devotes a long chapter to the finances of the C.B.C., an organization which has made a notable contribution to Canadian culture both as a patron of artists and as one of their media of expression. One of the Corporation's critical defects, it finds, is inadequate direction in accounting and financial matters.

But this is not due to a lack of imagination on the part of the Corporation's conscientious and overworked accounting staff. It is in a large part due to the antiquated accounting system with which they are saddled. As a government enterprise, the C.B.C. has been burdened with a lot of vestigial accounting practices, which were originally designed for administrative departments of government. By neither structure nor design were these departments ever intended to carry on quasi-commercial activity, and the transfer of these practices to a commercial enterprise has greatly curtailed the scope for initiative and independence. This transfer has in fact created scope for the clutter of red tape and the frustration of inflexibility.

The list of vestigial practices is astonishing. Reading it, one is surprised that a commercial organization with a budget equal to that of the government of Newfoundland has not been slowly strangled. The method of running the accounts is an illustration. It is a carry over from Federal government accounting.

In government accounting a fundamental premise is that the accounts should be kept on a cash basis. The objective is parliamentary control over the activities of the government. Since Parliament votes the executive cash, it is natural that the executive should have to report in terms of cash. Moreover, Parliament wants to be sure that the amounts voted are expended expressly for the purposes authorized.

Accordingly, in government accounting there is the practice of appropriations by which Parliament authorizes the provision of designated amounts, and the practice of commitments whereby purchase orders are approved before issuance. Such procedures are well conceived for the purpose intended, the retention of Parliament's ability to control the Crown.

But there is not the remotest prospect of the C.B.C. usurping the prerogatives of Parliament. It is a Crown corporation specifically charged with the responsibility of providing a national broadcasting service for Canada. For this end, of course, it has to maintain and operate broadcasting stations and deal in the various commercial services that are related thereto. In other words, the C.B.C. is a proprietary corporation. Parliament, however, has furnished it with a fund of capital so it can carry out its purposes. Its responsibility then is to furnish broadcasting services and protect its capital. For this purpose, no parliamentary appropriations are ordinarily necessary.

Yet the Corporation runs its books on a governmental basis. Two separate sets of books are maintained: the general accounting records in Ottawa, which are on a cash basis; and appropriation accounts at the various stations, which provide the bases for budget and achievement reports on operations. Moreover, different codes of account are used in the two sets of books, the cash records being organized on the basis of location and function, i.e. programming, engineering, etcetera, and the appropriation records on the basis of the station and department affected. Records of television programme costs are also kept at the various stations, but these cost records cannot form an integral part of the operating accounts because the latter are on a cash basis. It is little surprise then to find that "the C.B.C. has encountered serious problems relating to accounting matters . . . ".

Fortunately owing to an imaginative study of the C.B.C.'s accounting problems the prospects of resolving them in the near future are decidedly good. One of the lesser publicized aspects of the Royal Commission's report is a ninety page appendix dealing with the report of a firm of chartered accountants, P. S. Ross & Sons. It deals exhaustively with the whole financial system of the Corporation and recommends some substantial changes. Among many other suggestions, they recommend that the operating accounts be kept on an accrual basis and the recording process be decentralized, the detailed accounts to be kept at the local offices and the control accounts at Head Office in Ottawa. In addition, they suggest that the system of commitment accounting, with its attendant duplication, be discontinued, and that the cost accounts should become an integral part of the accounting system.

No one reading the report of P. S. Ross & Sons can honestly deny the imaginativeness of the accounting mind. Nor can they deny that there is both a need and plenty of scope for such minds in broadcasting.

PERSONALS

T. E. Chappell, R.I.A., has been transferred from the Hamilton office of Robertson-Irwin Ltd. and appointed Assistant Manager of their Edmonton branch.

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R. G. Nelles, R.I.A., C.G.A., of the Windsor Chapter, has been appointed Assistant Comptroller of the H. J. Heinz Co. of Canada Ltd. Mr. Nelles was formerly Manager of Budgets and Procedures with the same firm.

—o—o—

Albert Rivers, B.A., M.S., R.I.A., of the Ottawa Chapter, has passed the final papers of the Institute of Chartered Accountants and has set up a practice in Ottawa.

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R. T. Fath, a general member of the Edmonton Chapter, has been admitted into membership in the Institute of Chartered Accountants. Mr. Fath is with Canadian Equipment Sales & Services Co. Ltd.

—o—o—

J. Grant Glassco, O.B.E., F.C.A., R.I.A., of the Toronto Chapter, has been appointed a Director and Executive Vice-President of Brazilian Traction, Light and Power Company, Limited. Mr. Glassco has retired from Clarkson, Gordon & Co., Chartered Accountants, of which firm he was a partner.

C. & M. Round-Up . . .

By N. R. BARFOOT

LOOKING AHEAD

Peeling Fruit by infra-red process reduces weight loss from 18% to 2.7% over mechanical peeling.

—o—o—

Small Nuclear Power Plants are planned for northern section of Canada for industrial use. Range is 1000 - 2000 KW. May be flown in and assembled.

—o—o—

Chemical bonds for metals are now in use. These special adhesives provide greater strength with less weight.

—o—o—

Capital Expenditures 8½ billion this year. This is a gain of 7½% over last year but about 6% of this is due to higher prices.

—o—o—

Government spending to exceed 5 billion this year. Until universal peace is announced it is fairly obvious government spending will be high.

—o—o—

More money for mortgages. The Bank of Canada has proposed that the Chartered Banks undertake 150 million in new mortgages for 1957. This would indicate 15,000 houses.

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Regulatory power over Finance Companies may be in the offing. According to the Governor of the Bank of Canada they constitute a rival banking system without the Federal controls that apply to the Chartered Banks. The Government's concern over interest rates is undoubtedly behind the move.

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OF GENERAL INTEREST

Sports Car sales are on the increase. If you are interested here are some approximate price ranges:

$3,000.00 and under

MGA (British)—has superior handling qualities

Triumph TR 3 (British)—Economical and has high performance qualities.

$3,000.00 to $4,000.00

Austin Healey (British)—Very smooth ride

Porsche (German)—Steering and cornering, superior

Alfa Romeo Giuletta (Italian)—small high speed engine

Jaguar XK 140 (British)—large six, very fast.

$4,000.00 to $5,000.00

Chevrolet Corvette (American)—competes favourably with European rivals

Mercedes Benz 190 SL (German)—comparatively roomy, high speed

$5,000.00 and up

Mercedes Benz 300 SL (German) competition car

Ferrari (Italian)—Competition car, not for commuting

Bently Continental (made by Rolls Royce) Superior workmanship with high performance.

TIGHT MONEY

The pros and cons on inflation and credit are waxing warmer all the time. Here are some considerations for the layman.

What is inflation? Your dollar of 1957 is worth 96½ cents of last year's, 83 cents in terms of 1949 and 50 cents compared to 1939. Total personal income rose 10% last year, 2/3 was real, the balance in price increases. 700 million worth of the 2.7 billion produced in goods last year was lost in price increases. That is inflation, paying more for the same goods.

Is this harmful? Yes—as prices rise people and companies scramble to buy before further rises take place and the demand curve soars, creating scarcities and furthering the scramble for money and goods. In a scarce market people will pay more to get goods that are disappearing. Carried to completion the cycle becomes the classic spiral of wages and prices with a crash at the top end. "eg" Germany after World War I.

Are we in such a cycle? Some say yes, the spiral of wages and prices is on and accelerating, others that it is creeping at a slow upward rate. Most economists agree with proposition No. 2.

Is there a remedy? Two broad types of action may be taken. The first is Government regulation of wages and prices. To be effective this usually results in control of the total economy. Political overtones of course, accompany this system and statism rapidly becomes an end unto itself. Some modern totalitarian states regulate their economics in this fashion.

A more palatable and more informal check on inflation is through tight money. Inflation comes about because of too much demand for the productive output of the country. The bidding system comes into play and in this auction of goods, materials and wages, the cost rises and rises. If money is restricted, the bidding is obviously less and buying power more nearly tends to meet the available goods.

Money is restricted through higher interest rates and fewer term loans. It does create a certain scramble for money itself, but the cost of borrowing is a relatively small part of final price.

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ON THE PERSONAL SIDE

Unions for engineers are growing, at least in the United States. Some 60,000 engineers out of 500,000 are now in unions.

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Executive appointment watch is the latest, can be preset from five minutes to four hours. Wonderful for clergymen and after dinner speakers, also some bosses.

—o—o—

One for the nutrionists, certain South African natives lack calcium, vitamin "B" and riboflavin in their diet. Despite this they are fairly free from heart disease, ulcers and hardening of the arteries.

—o—o—

University Enrolment is now over 78,000 in Canada or close to 5% of the total population. The high birth rate during the war will push this percentage much higher in the next five years.

Books in Review . . .

MANAGEMENT ACCOUNTING

Text and Cases by ROBERT N. ANTHONY, D.CS.

Richard D. Irwin, Inc., Homewood, Illinois, 1956, p.p. 497

Reviewed by GEORGE MOLLER, D.Jur., C.A., R.I.A.

The preface states:

"This book is intended for the users of accounting information."

The text is a very interesting attempt to present the basic aspects of financial, cost and general accounting to those who require accounting information for management purposes. It assumes no previous knowledge of the subject, starting from the use of figures for management, emphasizing that accounting figures are approximations, accounting data incomplete and underlining that people, not figures, get things done.

The presentation of basic accounting concepts is based on the most recent statements issued by the representative accounting authorities in the United States (Canadian and British pronouncements are not mentioned). These chapters will make interesting reading, even for the professional accountant or accountant in industry whose education took place in a period when several of these concepts had not been fully developed and who, therefore, had picked up this knowledge only by bits and pieces.

After treating the mechanics of accounting, the balance sheet and the income statement concisely, the text attempts to introduce the student to the essentials of cost accounting. All chapters are supplemented by the presentation of cases which are intended to develop the student's ability to apply the discussed concepts and methods, though no solutions are presented.

The second part of the book, "Management Uses of Accounting Information" leads from the funds flow statement to ratios and percentages and then embarks on a discussion of the present challenges to conventional accounting concepts, i.e., the price level controversy in its application to overall adjustments, inventory valuation, fixed assets and depreciation, and direct costing.

Two chapters deal with control (responsibility centres, search for standards, analysis of cost accounting variances).

The last three chapters are devoted to planning, i.e., period planning or budgeting, project planning and planning of capital acquisitions.

Eight review cases conclude the presentation.

It would be very desirable if financial officers and particularly controllers, could sell their colleagues in management on reading this book as an obligatory educational step towards a better understanding between general management, operating management and accountants on the preparation and use of accounting data for management purposes.

Why Not Operate a Capital Budget? . . .

By Robert J. Mulle,
Assistant Controller,
S. Morgan Smith Company,
York, Pennsylvania.

Some of the results of operating a capital budget, the author of this article claims, are improved operations planning, better control of capital expenditures and greater financial stability. Outlined below, he presents a simplified capital budget system for the use of small and medium sized companies.

THE THOUGHT of creating and operating a capital expenditures budget frequently appalls many persons when first presented with the task. And with some justification, for a very important and difficult area of financial and plant management is involved. Capital expenditures are usually quite large in amount and are made from the funds which frequently would be used to pay dividends to the owners or they are obtained through funded debt. When these funds are appropriated for the purchases of capital goods the stockholders have every right to expect that such purchases will result in improved operations and greater dividends in future years. The net return on capital is a highly important factor in the continued growth and success of any business.

Need for a Simple Capital Budget System

There have been many excellent articles published recently which present the need for adequate budgetary control, the various methods of developing a general budget programme, the personnel to operate the programme and the benefits to be derived. There is also an adequate library on methods to be used in justifying and evaluating the need for capital additions and the value of one piece of equipment as compared with another. It is not the intent of this paper to discourse at length on the merits of these various methods but merely to advocate their use in conjunction with the control of capital purchases and the operation of the capital budget system. However, there does appear to be a need for the presentation of a simplified capital budget system for the use of small and medium sized companies as an aid in helping these companies participate in the obvious benefits of the capital budget.

A Valuable Management Tool

This basic system, when used in conjunction with all of the various accepted methods of equipment evaluation and control, should provide the start of an effective and valuable tool of management. Its value will grow as its use becomes fully accepted within the organization and the system will grow and be further improved as the company grows. Naturally, there may be resistance and even active resentment when this control is first introduced but strength and patience on the part of the Controller or Budget Administrator will successfully overcome this

starting inertia. However, with the proper backing of top management and with the co-operation of the operating department heads the system will prove its value. The operating department heads quickly recognize the assistance this system offers in their planning of acquisitions necessary for future production and growth programmes.

The development of a system to fit each particular industry is not practical or desirable at this point. Each application probably will require some modification to conform to organization and production problems peculiar to the company in question. However, an actual case application is presented hereafter to illustrate the general operation of a simplified capital budget system which has been successfully operated for several years.

Developing the Annual Capital Expenditures Budget

The first step is the development of the annual capital expenditures budget by the various department heads. Each department is requested to determine the capital additions required for the next fiscal year during the fourth quarter of the current year. These items must be listed in detail with an accurate estimated cost composed of base cost, taxes, transportation cost and installation expense, if any. The anticipated month or months of acquisition is also required in order to aid in forecasting cash requirements for the new year. The various departmental forecasts are submitted along with a detailed explanation of each item and the justification for its purchase. All of this data is received by the Controller for review, screening and consolidation into the Capital Budget. The screening is performed by means of conferences, discussions with the department heads, master mechanic, engineers, and such top management officials who are concerned or can assist in analyzing the need for the items. After all departmental forecasts have been thoroughly examined, the accepted items are combined into the annual Capital Budget report. The contents are divided into the following groups:

(1) Items that are urgently required this year.
(2) Items that should be done this year but are postponable.
(3) Items that are desirable but can be postponed.
(4) Items required only if certain events occur.

The Budget is submitted to the Board of Directors with the recommendation of management for acceptance of such of the groups as are necessary or desirable in view of the overall future operational picture. In essence the Board approves a total dollar limit for expenditures, not the specific items.

Flexibility in the Budget

The approved capital budget items are then assigned project numbers by the Controller's staff assigned to budget operations. Copies of this approved budget are distributed to each department head con-

cerned. Any future reference to the approved items is coded with the project number assigned. Each of the items contained in the approved budget is posted to a page in the Budget Ledger.

We now have an approved dollar limit within which to operate for the budget year. By no means does this mean that each of the individual items constituting the budget will be or must be acquired. It is within the discretion of the Controller and the President to vary the use of the funds by elimination of any of the items or substitution thereof, if such becomes desirable during the course of the year. Furthermore, if unusual conditions arise it is possible that the Board of Directors may be requested to authorize an additional sum for capital purposes. In order to accomplish and control this inherent flexibility each desired acquisition of the items in the budget, or of items not previously included in the budget, must be specially requested by the department heads. A form is provided all departments for this purpose; the form, entitled "Capital Appropriation Request", is included herewith as Exhibit I.

How the Budget Works

When a department head desires to purchase one of his budgeted items he prepares an "Appropriation Request", indicates the project item number, and submits two copies to the Controller. The request is then reviewed to see if conditions have changed since the original budget was created. If the purchase is still warranted the request is approved by the President and the Controller. A capital work order number is assigned to the project, account classification determined and one copy of the request is returned to the department head as his authority to requisition the item. The Purchasing Department is notified of the capital work order number assigned to the project in order that they may honor the purchase requisition when presented. In order to preserve control it is important that the Purchasing Department not be allowed to purchase capital items unless they have received this notification.

When the request is for the purchase of capital items not previously included in the capital budget an attempt is first made by the Controller to have the department head agree to relinquish some item or items from his portion of the Capital budget and use the released funds for the desired item. If it is impossible to drop any of the items from the budget, the Controller and the President decide whether to refuse the request or to approach the Board of Directors for an additional allowance. Naturally, the latter action is not desirable under ordinary circumstances as it tends to defeat the purpose of having a budget operation. The department heads must be held as closely as possible to their forecasted requirements in order to fix their sense of responsibility for the creation and successful operation of the budget. A lack of responsibility will result if they know that the budget is variable and can

CAPITAL APPROPRIATION REQUEST

Project # 6102

Approp. # 3-56

Date January 5, 1956 Order # 615003

Description	Account #	Estimated Cost
4 - Dynamometers for Laboratory	1541	$ 20,000
		$ 20,000

Reason for Request (Attach justification study):

Immediate need for four (4) units to complete first section of new test facility. Six units were included in capital budget and assigned project #6102

Approvals:

J. T. Jones	1/5/56	J. C. Cash	1/7/56
Department Head	Date	Controller	Date
R. Robb	1/5/56	A. O. Doe	1/7/56
Division Head	Date	President	Date

EXHIBIT I

be adjusted at will during the year. Of course it must be recognized that certain inaccuracies in forecasting are inevitable and that changing economic conditions will frequently force corrections in the annual capital budget in spite of every effort management makes to "hold the line".

The Controller's staff records the approved appropriation requests in the Capital Budget Ledger. The necessary forms to properly record and maintain the activity of the capital budget are as follows:

Capital Budget Control Sheet—Exhibit II.
Capital Budget Ledger Sheet—Exhibit III.

A serial appropriation number is assigned to each approved appropriation request, for reference purposes, and the data is recorded on the Control Sheet (Exhibit II). The Control Sheet serves the dual

CAPITAL BUDGET CONTROL

BUDGET YEAR - 1956

Approp. #	Project #	Order #	Description	Approp. Cost
1 - 56	603	615001	1 - #70 G & L Mill	$ 96,000
2 - 56	601	615002	1 - 4L Gisholt Lathe	16,000
3 - 56	6102	615003	4 - Dynamometers	20,000
4 - 56	610	615004	1 - Forge furnace	2,500
5 - 56	608	615005	3 - automatic welders	3,000
15 - 56	6105	615006	1 - Air testing stand	5,000
16 - 56	6102	615003	2 - Dynamometers	8,500
17 - 56	6201	615016	Foundation and steelwork - Office	200,000
				$

EXHIBIT II

purpose of maintaining the sequence of the serial numbers assigned and providing a cross-reference between appropriation numbers, project numbers, and capital work order numbers. The amount of the request is then posted in the "appropriated cost" column of the individual Ledger Sheet (Exhibit III). These individual ledger sheets were prepared from the approved Capital Budget. Subseqent actual costs, as reported each accounting period for the various Capital work orders in process, are posted to the "actual cost" column of the Ledger Sheet. The ledger sheets are totaled and balanced each period in order to show for each capital item the total amount appropriated, the balance unappropriated, the total actual cost incurred and the balance unexpended.

CAPITAL BUDGET LEDGER

Budget Year - 1956 Project # 6102

Description of Project: Order # 615003

6 - Dynamometers for Laboratory

Account # 1541 Maximum $ 28,500

Date	Approp. #	Description	Approp. Cost	Actual Cost
1/ 7/56	3-56	4 - Dynamometers	$ 20,000	$
1/21/56	16-56	2 - Do.	8,500	
3/ 5/56		Cost Report for February		21,100
4/ 6/56		Cost Report for March		9,000
		Total	$ 28,500	$ 30,100

EXHIBIT III

Budget Progress Report

A Budget Progress Report (Exhibit IV) is prepared each accounting period summarizing the activity to date related to each of the capital items constituting the capital budget. This report is prepared directly from the budget ledger sheets and shows essentially the same data as is mentioned in the preceding paragraph plus the budget item number and a brief description of each item. This report, in essence, is a listing of the items in the approved capital budget and must agree in total to the amount authorized by the Board of Directors. The report is distributed to the top management executives as well as to each department head who submitted a capital forecast for the year. The Treasurer's copy is used to adjust the cash forecast prepared on the basis of the original capital budget.

EXHIBIT IV

CAPITAL BUDGET PROGRESS REPORT
June 1956

Project Description	Project #	Project Amount	Approp. to Date	Unapprop. Balance	Expended to Date	Unexpended Balance
Manufacturing:						
1 - 4L Gisholt Turret Lathe	601	$ 16,000	$ 16,000		$ 15,900	$ 100
1 - Cincinnatti #4 Mill	602	20,665		$ 20,665		20,665
1 - #70 G & L Horizontal Mill	603	100,000	96,000	4,000	96,500	3,500
Total Manufacturing		$550,000	$370,000	$180,000	$232,600	$317,400
Engineering:						
1 - Test Rig for Laboratory	6101	$ 35,000		$ 35,000		$ 35,000
6 - Dynamometers	6102	28,500	$ 28,500		$ 30,100	(1,600)
Total Engineering		$141,500	$104,700	$ 36,800	$ 84,600	$ 56,900
Administrative:						
Addition to Office Building	6201	$250,000	$100,000	$150,000		$250,000
Office equipment	6202	30,500	12,300	18,200	$ 8,800	21,700
Automotive equipment	6203	9,000	6,000	3,000	6,000	3,000
Total Administrative		$289,500	$118,300	$171,200	$ 14,800	$274,700
TOTAL BUDGET		$981,000	$593,000	$388,000	$332,000	$649,000

The progress of each project is closely followed by the Controller by means of the Budget Progress Report. If the cost of any project exceeds its authorized cost, immediate action is taken with the responsible department head. The project cost is reviewed and compared with the estimate in order to locate the cause of the excess and a written report is rendered to the Controller by the person responsible for the project. If the project is not completed, an attempt is made to reduce costs on the remaining work in order to conform to the project budget. If the project is completed, the department head is requested to submit an appropriation request to cover the excess cost and to attempt to recover his over-expenditure of allotted funds by deferring other projects or reducing their scope.

Advantages of the Capital Budget System

Now that we have quickly gone through the basic mechanics of a simple capital budget system we should emphasize some of the advantages to be obtained from its use.

(1) One prime benefit is the creation of constructive advance thinking and planning on the part of the various department heads and their staffs. The annual capital budget keeps these persons constantly projecting operations in terms of future capital requirements for they must be able to present their forecasts by the budget deadline. If they miss the deadline they know that they will have to wait another year for funds, unless the requirement is unusually urgent, or they must face the embarrassment of explaining why the item was not submitted when required. As a result, modernization and expansion programmes are frequently developed for a period of two, three or even five years ahead in order to facilitate obtaining the annual budget allowance.

(2) A second benefit lies in the area of purchase justification. Since the capital forecast and the appropriation requests both receive the scrutiny of top management the department heads must be able to show definite savings and need in order to receive approval. Without the control afforded by this system, purchases might be made which could not be justified.

(3) Top management is kept informed throughout the year of the exact status of the capital acquisitions by means of the periodic Budget Progress Report. Commitments to purchase, cost of purchases made and the remaining items to be acquired are ascertainable at a glance. Without capital budget control a state of confusion frequently exists when the question "How much more money can we spend for capital items?" is asked on numerous occasions during the year. In many cases, management might not even know that a capital addition was obtained by a department until after the transaction was completed which could result in a dangerous cash position, the acquisition of unjustified equipment and the deferment of the purchase of more urgently needed items.

Conclusion

Certainly modern business cannot afford to operate without the protection of a basic capital budget programme. The size of a business should not be a determining factor in refraining from operating a capital budget. The procedures outlined above can be applied and maintained by one person on a part-time basis for even a medium sized company. If an accounting machine system is available the bulk of the operation can be adapted to it with hardly a noticeable increase in work for the operators. The time spent by everyone in making the necessary reviews and decisions is more difficult to measure. However, the results obtained from the operation of a capital budget are certainly invaluable in terms of improved operations planning, better control of capital expenditures and greater financial stability.

FOR FURTHER READING

PROBLEMS OF CAPITAL EXPENDITURE BUDGETING, by C. I. Fellers, N.A.C.A. Bulletin, May 1955.

CONTROL OF CAPITAL EXPENDITURES, by David J. Young, The Cost Accountant, May 1954.

JUSTIFYING CAPITAL EXPENDITURES—BEFORE AND AFTER, by Oscar A. Lundin, N.A.C.A. Bulletin, July 1956.

LETTERS AND CORRECTIONS

In the January 1957 issue of "Cost and Management" an article entitled "Measurement of Return on Capital Employed by Profit Centres", by F. J. Muth appeared. Following we quote from a letter to Mr. Muth from Dr. George Moller, Hamilton, Ontario:

"On page 10 of that issue of "Cost and Management", in the first paragraph starting 'The ebb and flow of cash . . . ', you state that the requirements for cash to finance operations are 'to be related to *cost of sales, including tax*'. Being the treasurer of our company, I would like to apply a sound percentage developed from past experience. To do that, though, I would like to find out from you how the quoted 7½% of the cost of sales figure, including tax, should be computed.

"In your case study (on page 16), you mentioned that 'through application of the formula of 7½% cost of sales', the $170,000 cash requirements has been reduced to $160,000. $170,000 represents 7½% of roughly $2,260,000. My computation of cost of sales for 1956 Budget, including income tax (column 1) totals $2,580,000. 7½% of cost of sales, plus tax on the changed figures (column 2) would amount to $2,523,000—7½% of the difference does not amount to $10,000. Could you please enlighten me on this particular phase of the application?"

Mr. Muth's reply is quoted below:

"I must apologize for the error in the exhibit attached to my article. You are quite right in stating that the 7½% formula for determination of cash is incorrectly computed in this example. How this error occurred we are at a loss to understand, but the figures should read $194,000 in column 1, $190,000 in column 2, $185,000 in column 3, and $200,000 in column 4. I regret that you have been subjected to this confusion.

"As I tried to make plain in my address, the 7½% figure reflected the experience within the Armstrong Cork Company and would not necessarily be a sound figure to use in some other type of industry. As treasurer, you would have the responsibility to study your past experience and determine the minimum requirements at several levels of activity in order to develop a similar percentage formula."

Communication Problems In An Expanding Business . . .*

By CARL A. GERSTACKER,
Vice-President and Treasurer,
Dow Chemical Company,

As a business expands, the personal contact of the smaller business is lost and accounting communications are hampered by misunderstandings and riddled with pitfalls. Some of the basic problems are adduced below and solutions offered.

NOT SO many years ago "communication" was a simple and well understood term. In the business world of to-day it has taken on a new connotation. Throughout all the areas of management everybody seems to be talking about it, but I am not at all convinced that everyone has the same interpretation of it . . . and I am very sure that not everyone knows what to do about it. It appears, in fact, to be a mid-century bogey with a rare capability for giving otherwise confident business men anxiety neuroses and feelings of insecurity and frustration.

The objectives of this modern "communication" has something to do with "letting everybody know what is going on and why so they will *feel* a part of the big picture and better know how to *play* their part in it." The frustration comes about because semanticists and psychologists have entered the scene with very disconcerting news. They assure us of its necessity, and then proceed also to assure us that, however elaborate our mechanics, there are any number of reasons why the receiving end may not get the same picture the sending end thinks it is projecting.

The problem becomes grossly magnified in a large and expanding business because the theoretical objective is to maintain the same mutuality of understanding and purpose among masses of people that one might have in a small, closely knit group.

Accounting Communications

Now, in the interest of pertinence and, I hope, a reasonable degree of understanding, I would like to subdivide this category once more and consider just the communication of accounting. That, indeed, is a sufficiently large problem for one sitting.

Someone has said that there are four kinds of people, made up of combinations of smart versus dumb and energetic versus lazy. The smart and energetic person is obviously the shining light and the backbone of a business. The person who is smart but lazy is probably still on the asset side of the ledger. He may not pull as much load as you would like but he will contribute something. The fellow who is both dumb and lazy is admittedly pretty marginal . . . but assuming you can afford a bit of philanthropy he at least won't do much damage.

*An address delivered before a joint meeting of the Windsor Chapter, S.I.C.A. and the Detroit Chapter of N.A.C.A. on February 18, 1957, in Detroit.

But . . . the guy who is dumb and energetic . . . he is the guy who can really cobble up the works.

The major objective of accounting communication as I see it, is to insure that people are smart — that is, smart with regard to their interpretation and use of the figures we supply them. What we *don't want* is information without education.

Now, with that as a premise, we might take a look at some of the booby-traps, the roadblocks and factors which aggravate the problem of good accounting communication.

Communications in the Small Company

In a young, or at least in a small company this presents few problems. Points of communication are few and the act of communication is frequent. There is daily face-to-face contact between the primary elements of the organization. The president, sales manager and production manager are as interested in, and quite likely to be almost as familiar with the "books" as is the treasurer. It is easy for them to ask, "How did you arrive at this figure?" and just as easy for the treasurer to explain. Likewise the treasurer is in close touch with the production, sales and other operations and has an intimate understanding of the whys and wherefores of these functions.

But since communication is so important to success, and since this communication is so good, obviously the company grows. And one day we find that our cosy little organization has grown into quite a staggering enterprise, possibly with manufacturing divisions in widely separated geographical locations. We may have the same president, treasurer, sales manager and production manager—(who by now is probably known as the executive vice-president)—but there the similarity ends.

Communication Problems Grow With the Business

They are all very busy and no longer in intimate daily contact. Moreover, they have all found it necessary to delegate many responsibilities to others so they do not even have an intimate knowledge of what is going on in their own realm of responsibility. Moreover, in a communications sense, those who are on the production manager's team and the sales manager's team are probably two steps removed from those on the treasurer's team—and vice versa. The whole operation has become exceedingly complex and populous.

The president has found need for an executive committee and one or more assistants, and a number of vice-presidents have come into being.

The executive vice-president has a number of production managers and divisional managers reporting to him. There are operating boards and numerous echelons of supervision.

The sales manager has acquired various product managers and sales office managers, as well as a market research department and other functions.

The treasurer's staff has grown. There are multiple accounting sections, economists and divisional controllers.

Meanwhile a large research staff and a director of research have come into being. A legal department has been established with a sizeable staff of attorneys. There are purchasing and traffic departments, industrial relations and public relations departments, production planning groups, co-ordinating and advisory committees of various sorts.

Certain types of decisions and plans which could once be arrived at during a short meeting of two or three officers may now require weeks or months in the making and the research, advice and agreement of dozens of individuals. Our small group, intimately familiar with each other's methods and problems, has been replaced by masses of people working in specialized fields and often highly dependent upon written information for their knowledge of other operational areas. And of course many of these individuals are new to the company and do not have the background knowledge of the "old timers" to draw upon.

The Importance of Good Communications

What does all this mean from the standpoint of accounting communication? It means first that the typical *method* has changed from a more or less casual review of operations between the treasurer and two or three other individuals to a complex set of reports from a complicated accounting system. More important, it means that dozens or scores or even hundreds of people are asking for figures.

The sales department wants figures—not just the sales manager, but the product managers, the market research group, and others.

Production supervisors want figures—if only to keep abreast of how their department or plant or division is doing financially. But it doesn't necessarily stop there.

Research people want figures . . . and industrial relations people . . . and production planning groups . . . and on and on and on. As the company grows the ever growing number of its segments become eager for cost information and other financial data.

Now, the important thing is that while some of these requests may be put down to relatively casual or routine interest we can presume that in most cases our figures are going to play a part in the making of decisions — often highly crucial decisions — the expenditure of vast sums of money, long range planning, the expansion of facilities, the selection of a plant site, the determination to enter a new market or product line, or to drop an existing one.

Thus it becomes vital that the people using these figures be able to view them in proper perspective, have a thorough understanding of just what they mean. And here is where, in a large company, communication begins to break down — where pitfalls and misunderstandings become prevalent and can cause serious damage unless we take every precaution to avoid them.

Pitfalls of Accounting Communications

As a very simple example — suppose someone comes along and asks for our first quarter sales? If he is a salesman or any one of dozens of other people, he may well be talking about calendar year. He means January, February and March. Well, it so happens that our fiscal year ends May 31, and when we in the accounting section say "first quarter" we are talking about June, July and August.

So unless we make certain we are both talking about the same three months our communication has gone sadly awry.

That is, of course, a very simple situation that we manage to avoid most of the time. But it remains forever a potential area of misunderstanding.

In considering some of the other pitfalls let's take a hypothetical case involving a young man whom we'll call Joe. Joe had a good record as a production superintendent and so when our hypothetical company built a new manufacturing division in Wisconsin, Joe was placed in charge.

The plant has now been in operation for three months and we ask Joe to come in to headquarters for a review of his operations as reflected by our accounting records. Joe is bright, conscientious, enthusiastic but, of course, relatively inexperienced in his new responsibilities.

He comes in and rocks us back on our heels with an opening statement: "Accountants are just plain nuts." He then proceeds to dump an armful of books and papers on the table and explodes, "All my accountant did the first year up there was to account for construction costs. Yet you show the cost of the accounting work as administrative expense. Furthermore, we are depreciating on the declining balance method and my costs are distorted by half the amount of the depreciation shown."

He then starts peeling out reams of paper to prove that our accounting statements are wrong — and the most interesting thing about the calculations he presents is that for every statement made he has at least two answers and in some cases more.

Now, are we going to tell Joe he is wrong? He has a very sound case.

Accounting As a "Practice"

I am sure most of you have encountered experiences along this line, and it brings us to the crux of the communications problem. I will

wager that 99 out of 100 people outside of the accounting profession consider accounting to be an exact science. After all, every red blooded American has been imbued since childhood with the idea that "*figures don't lie.*" Well, I am not prepared to admit that they *do* lie, but I will say that without adequate background knowledge they can be powerfully misleading.

Accounting, as we in the business know only too well, is *not* an exact science. It is more of a "practice"—comparable in some respects to the practice of medicine. We weigh all the circumstances and then proceed along the lines that are *best in our judgment.*

We know that practical business accounting is based upon a myriad of assumptions, compromises and, sometimes, arbitrary decision. And the larger and more complex the business the more such factors creep in. *We* know these things, I say, but most of the people with whom we deal do *not.* And that is where our communication breaks down.

There are many grey areas. Some items are clearly expense. Others clearly capital. And others in the never-never land between where we have to make an assumption, an arbitrary decision or a compromise. Research expenses often cross the line into a grey area that is both research expense and production cost.

And what about intraplant or interdivisional transfers? Suppose division A produces a material which is taken by division B for upgrading. How do we charge division B for this material—at cost or market? If we charge it at cost the manager of division A is going to say, "This is for the birds! You show me making no profit. I can sell the stuff on the market and show a nice profit." If you charge it at market the manager of division B may say, "To heck with this! I can buy the same stuff from Glottz & Co. for less than market, or I'll make it myself for half the price."

Since management obviously had some good reason for providing integrated production here is a situation where a compromise—or in any case a *decision*—must be reached. But in the absence of a knowledge of the decision or assumption the resulting figures by themselves are not truly meaningful.

Problems in the Chemical Industry

Or, again, how do you apportion costs in the case of co-products and by-products. This is an ever-recurrent problem in the chemical business and is further aggravated by the fact that it may frequently be necessary to reappraise and alter your assumptions.

For example, we electrolize brine. From it we obtain chlorine, caustic soda or hydrogen. Now assuming all three were readily marketable it would be a fairly simple matter to apportion costs. *But . . .* suppose we have no ready use or market for the hydrogen, so we simply vent it to the atmosphere. Obviously we can't charge much cost to the hydrogen under such circumstances.

Perhaps it is feasible for the other two to share the cost equally. And then one day you find caustic soda a drug on the market. You have to reduce the price and perhaps even throw some of it away. It looks as though chlorine will have to bear a major part of the production cost. But then perhaps a year or two later the situation may be reversed.

So when you find a good market for ammonia and instead of venting the hydrogen you build a plant nearby and make ammonia with it. Hydrogen then should be able to share the cost of its own production.

Here again bare figures without knowledge of the assumptions behind them can be misleading—particularly when the assumptions change and someone wants to make historical comparisons.

Well, these are only typical of numerous problems confronting the accounting function of any large company. Possibly they are unusually profuse in the chemical business because of the chainlike nature of its production wherein a relatively few basic materials are broken apart, combined and recombined into hundreds of end products having widely varying market values. But I am sure all of you can think of numerous similar problems within your own experience.

Communication Problems in the Large Business

The difficulty, from a communications view, is that there can be only one set of accounts—or, at least, in most cases it is impractical to keep more than one set. The rules imposed for computing income taxes are sometimes at odds with people's opinions as to proper accounting and some companies have gone so far as to maintain two sets of records—one for tax purposes and the other for internal management. The reason for this, of course, is for proper communication with the Internal Revenue Department on the one hand and with management on the other.

By and large, however, one set of accounts must suffice, and meanwhile the treasurer has other problems. His first obligation is to help get the most out of the dollars invested by the stockholders and to give them a conservative and accurate statement of result. In making decisions he has many problems such as the proper evaluation of data on physical life and obsolescence of fixed assets for purposes of depreciation.

Meanwhile, as I suggested earlier, the treasurer is not as intimately familiar with the whole picture as he was when the company was small and he kept all the books himself. He can't be, because he has had to split the work up among many individuals. His understanding, therefore, is no better than the communication that exists within his own department.

And sometimes I have a feeling that to-day's accountant does not have the understanding of his own figures that he might have. For all its obvious merit the electronic computer is inherently an enemy of

understanding. I do not believe that the accountant who feeds some data into an electronic "brain" and gets back some answers has the same understanding of those answers that he would have had if he had worked them out himself with pencil and paper, and he will have much more difficulty in recognizing some very large errors.

Formulating Solutions to the Communications Problem

Well, what is the answer to all this? Obviously it starts with recognition of the problem and proceeds from a desire to do something about it. Non-accounting people need to be educated to the fact that accounting is a practice rather than a science—that a set of figures on a piece of paper, whether penciled, typewritten or printed and verified by an independent auditor, does not tell the complete story. Some of us hate to admit this because we are afraid we will undermine the importance of our profession. In my opinion, this ostrich-like failure to readily recognize and discuss the fact that there may be more than one correct answer is one of our greatest sins and harms rather than enhances the acceptance of our work.

Non-accounting people need to be more informative in requesting financial data. Too often a man simply asks for certain data, gets it without question or comment, and is off to the races—quite possibly in the wrong direction. Instead of just making a bald request it would be very beneficial if he would sit down and say, "look, Joe, here is what I'm trying to work out." With an understanding of the problem and the objective the accountant could then supply the data *plus* the words of explanation or advice or caution needed to interpret and apply them correctly to the problem at hand.

However, the accountant may well have to lead the way. He can afford to be a bit more inquisitive and to volunteer more information. Where he knows compromise or arbitrary decision has entered into a situation he at least can say, "Now I don't know how you intend to use this, but I think I should point out that in arriving at this figure here we did so and so."

In our company we have been aware of these problems for some time and we believe we are making some progress in overcoming them. In the first place we recognized that sales, research, production, economic evaluation and all our other "customers" were using our information for different purposes and that no one set of accounts would supply the *right* answers for all these different purposes.

Conversely we acknowledged that attempting to operate an accounting system that would automatically supply right answers for so many divergent purposes would be a virtual impossibility and, in any case, would involve utterly ridiculous costs. So we have said, "We will run one set of books and these, insofar as possible, will reflect our taxable income."

To offset this, as well as help our new managers mature in their relationships with accounting data, we have embarked on an educational programme of training production men—and also accountants—in the intricacies of cost accounting. We have a sort of double-pronged attack. First, we keep no secrets from our production people as to what makes up their costs. Second, our production people determine *with* us what their standard costs should be.

This gives each the opportunity of viewing the same problems or situations from opposite sides of the fence, and, we think, materially improves understanding.

Since our manufacturing is quite widely decentralized we have found it necessary also to decentralize our accounting system so that each geographical location has readily available the accounting data immediately related to its own operations. Then to balance this decentralization and achieve consistency we have established an accounting policy forming group for the entire company. Thus we can combine divisional reports and prepare consolidated statements.

This, of course, implies another communication problem, but it is a minor one compared to what we would have if we attempted to carry on all accounting from headquarters. It is relatively easy to pass out decisions on accounting policy to accountants, and the more difficult task of relaying this information to plant managers is normally assigned to the divisional controllers. Sometimes, however, we aid them by explaining our position directly to the division head.

Another means of improving communication which we are utilizing with considerable success is to focus the attention of different branches of management on those areas of records which particularly concern them and over which they can exert control. For example, we are urging management to emphasize controllable costs and budgets and discouraging use of the term profits where the people concerned are obviously not in a position to control both income and expense.

Incidentally, we do not consider the budget as a fence but rather as a desirable goal. Fences can mean opportunities passed up and potential progress unrealized.

Well, there naturally are times when we feel pretty frustrated about our efforts, but on the whole we believe our communications are improving and it is encouraging to see some problems vanishing as they do improve.

FOR FURTHER READING

BUILDING A BALANCED COMMUNICATIONS PROGRAMME, A.M.A. General Management Series No. 170.

POLICY IN A LARGE ESTABLISHED CORPORATION, by Thomas W. Phelps, A.M.A. Financial Management Series No. 109.

MODERN COMMUNICATIONS FOR MODERN EQUIPMENT, by M. M. Koontz, N.A.C.A. Bulletin, Jan. 1957.

An Approach to Profit Control through Analysis and Reporting for Top Management . . .

By Robert C. Harrington,
Systems and Procedures Supervisor, Spencer Kellogg and Sons, Inc., Buffalo, New York.

Top management must have timely analyses of plant operations from the Controller to ensure prompt action if performance deviates from plan. The procedure followed by one large corporation in accomplishing this is outlined below and a typical gross profit analysis described.

ONE OF the principal functions of controllership, as outlined by the National Board of Directors of the Controllers' Institute, is "to measure performance against operating plans and standards, and to report and interpret the results of operations to all levels of management . . . "

This paper will review the procedure followed by one large corporation in order to provide top management with the results of plant operations. This company is engaged in activities encompassing the manufacture and sale of over 250 products in eight separate, though basically related industries. The operations of some 40 plants, mines and quarries are, to a substantial degree, co-ordinated and controlled through the utilization of standard costs and a budgetary control programme.

A decentralized cost accounting system has been developed to provide plant management with the impact, on costs and profits, of operating factors within seven days after the end of each month. Variances from standard, however, are often analyzed daily and weekly if conditions warrant, and, as a result, the fundamental requirement of control reporting is achieved—that is timeliness. Specific cost, sales and production reports and related data are forwarded to Division Controllers at the executive office for audit, analysis and interpretation of an industry and consolidated level and for further processing in order to achieve the monthly account closing.

Worksheets for Gross Profit Analysis

The method employed by the company in providing top management with a monthly summary and review of plant operations is the preparation of a gross profit analysis. This analysis will compare the actual performance with the monthly budget; the "worksheets" for such an analysis consist principally of three parts, as follows:

Part I—Net Sales and Gross Profit section, refer to Exhibit A. This worksheet will detail, by plant and industry, the actual and budgeted net sales and the net sales differences; the actual and budgeted gross profit, the gross profit percentages and the gross profit differences.

Part II—Sales and Cost Variances section, refer to Exhibit B This schedule presents, from subsidiary sources, the primary causes

Net Sales and Gross Profit Section
Actual vs. Budget

	NET SALES			GROSS PROFIT					
	Actual	Budget	Difference	Actual	%	Budget	%	Difference	%
Industry A									
Plant 1	$ 741,742	$ 737,358	$ 4,384	$ 225,933	30.5	$ 253,717	34.4	($27,784)	(3.9)
2	799,526	761,767	37,759	385,050	48.2	376,365	49.4	8,685	(1.2)
3	576,509	599,431	(22,922)	176,240	30.6	187,308	31.2	(11,068)	(.6)
TOTAL INDUSTRY A	$2,117,777	$2,098,556	$ 19,221	$ 787,223	37.2	$ 817,390	39.0	($30,167)	(1.8)
Industry B									
Plant 4	$ 184,718	$ 172,882	$ 11,836	$ 49,840	27.0	$ 44,839	25.9	$5,001	1.1
5	183,537	204,257	(20,720)	58,593	31.9	61,444	30.1	(2,851)	1.8
TOTAL INDUSTRY B	$ 368,255	$ 377,139	($8,884)	$ 108,433	29.4	$ 106,283	28.2	$2,150	1.2
Industry C									
Plant 6	$ 136,731	$ 207,046	($70,315)	$ 8,786	6.4	$ 54,505	26.3	($45,719)	(19.9)
7	326,832	413,930	(87,098)	96,730	29.6	111,427	26.9	(14,697)	2.7
8	102,681	152,524	(49,843)	6,963	6.8	34,210	22.4	(27,247)	(15.6)
TOTAL INDUSTRY C	$ 566,244	$ 773,500	($207,256)	$ 112,479	19.9	$ 200,142	25.9	($87,663)	(6.0)
TOTAL ALL PLANTS	$3,052,276	$3,249,195	($196,919)	$1,008,135	33.0	$1,123,815	34.6	$115,680	1.6

EXHIBIT A

SALES AND COST VARIANCE SECTION
ACTUAL vs. BUDGET

	SALES BUDGET VARIANCE				MANUFACTURING COSTS vs. STANDARDS				
	Mill Nets (1)	Commodity Mix (2)	Volume (3)	Budget Cost Variance (4)	Total Variance (5)	Raw Material Price Variance (6)	Overtime Premium (7)	Fixed Costs, Repairs & Adjustments (8)	Controllable Cost Variance At Plant Level (9)
Industry C									
Plant 6	$1,394	($1,558)	($18,859)	($26,696)	($30,769)	($166)	($745)	($8,447)	($21,411)
Plant 7	5,250	(2,772)	(26,300)	9,125	(571)	3,458	(102)	(10,195)	6,268
Plant 8	(399)	(28)	(11,737)	(15,083)	(21,219)	282	(197)	(17,626)	(3,678)
TOTAL INDUSTRY C	$6,245	($4,358)	($56,896)	($32,654)	($52,559)	$3,574	($1,044)	($36,268)	($18,821)

EXHIBIT B

INDUSTRY C

Industry Worksheet for calculation of Absorption, determination and elimination of non-controllable cost variances and adjustments.
Actual vs. Budget

Line		Plant 6	Plant 7	Plant 8	Total Industry
1	*Total Standard Cost* Cost of Sales Variance	($30,769)	($571)	($21,219)	($52,559)
	Non-Controllable Adjustments				
2	Raw Material Price Variance	(166)	3,458	282	3,574
3	Overtime Variance	(745)	(102)	(197)	(1,044)
	Fixed and Repair Costs				
4	Budget	28,829	65,012	30,193	124,034
5	Standard Extension	22,150	57,424	14,888	94,462
6	Absorption	(6,679)	(7,588)	(15,305)	(29,572)
7	Employee Benefits	(391)	(490)	(1,614)	(2,495)
8	Compensation Insurance	(630)	(246)	(186)	(1,062)
9	Miscellaneous Income	48	1,031	74	1,153
10	Dollar (Increase)— Decrease in depreciation, rent, insurance, taxes, etc.	(638)	978	(482)	(142)
11	Miscellaneous Adjustments	(157)	(3,880)	(113)	(4,150)
12	Total excluding Price and Overtime	(8,447)	(10,195)	(17,626)	(36,268)
13	Total including Price and Overtime	(9,358)	(6,839)	(17,541)	(33,738)
14	Total Controllable Variance	(21,411)	6,268	(3,678)	(18,821)
15	Total Budget Cost of Sales Variance	($26,696)	$9,125	($15,083)	($32,654)
16	Differences—Budget vs. Standard Cost of Sales Variance:				
17	Budget vs. Standard Absorption	4,073	9,696	6,136	19,905
18	Total Difference Budget vs. Standard Variance	$4,073	$9,696	$6,136	$19,905

EXHIBIT C

for the variations from budgeted gross profit; these elements are classified, herewith, into those factors resulting from sales considerations and into those factors arising from cost aberrations.

Part III—Worksheet for the calculation of absorption, determination and elimination of non-controllable cost variances and adjustments, refer to Exhibit C.

A study of this exhibit will disclose that this schedule acts as a subsidiary worksheet as well as being a primary report. The heretofore outlined Exhibit B, in fact, summarizes all of the variances detailed on Exhibit C. This latter exhibit constitutes, however, the most vital information-gathering worksheet in the profit analysis. Further study discloses the source of the cost variances reported on Exhibit B:

Exhibit B		*Exhibit C*
Col. 5—Total Variance	—Line	1
Col. 6—Price Variance	—Line	2
Col. 7—Overtime Variance	—Line	3

Col. 8—Fixed Costs, etc. —Line 12, sum of lines 6 through 11

Col. 9—Controllable Cost Variances—Line 14, line 13 vs. line 1

Exhibit C further details the reconciliation of the budgeted cost variance, column four on Exhibit B, which is the remaining variance after adjusting the gross profit difference (actual vs. budget, shown on Exhibit A) for mill nets, commodity mix and volume, and the total variance, column five on Exhibit B. This reconciliation is necessary because of a particular procedure in absorbing fixed and repair costs, which, in large measure, accounts for the difference in these two variances. The reasoning of the procedure in this matter is not necessarily germane to the general intent of this paper, so I shall abstain from further discussion on this point.

Elements of the Analysis

These three units become an integral part of the gross profit analysis and are consolidated upon one summary sheet and affixed to a general report on the monthly report of plant operations. To the Controllers writing the report, they become worksheets necessary to the analysis to be made. An examination of Exhibit A will direct the attention of the Controllers to those plants which will require analysis; a study of Exhibit B and C will disclose the elements that are causing the profit variation and the degree of variation from the budgeted profit.

One of the more important "tools" that the Controllers will utilize in the analysis is the report revealing the effect of mill nets and commodity mix on gross profit. Reference to Exhibit D will provide the reader with the data required to undertake this evaluation and also a separate hypothetical case to illustrate the procedure to be followed. In practice this report is processed by the Machine Accounting Department and is computed on electronic calculating equipment.

Another schedule that is used is presented in Exhibit E—the detail of the controllable costs, the use to which the information reported on this exhibit is put will be enlarged upon further along in this paper.

To proceed with the analysis which will constitute the main portion of the report to management, and now informed of the elements resulting in the variation of actual vs. budgeted gross profit, the Controllers are now in a position to determine and evaluate the underlying and basic factors causing the various sales and cost variances.

Sales Variations

Before illustrating a typical analysis, a resume of the procedures is quite pertinent to a fuller understanding of objectives. Significant variations in actual vs. budgeted sales are investigated to isolate such variances between,

(a) volume
(b) price (Mill nets)
(c) commodity mix

COMPUTATION OF THE EFFECT OF COMMODITY MIX AND MILL NETS ON GROSS PROFIT
(Hypothetical Case)

Commodity	CURRENT MONTHS SALES Quantity (1)	Mill Net (2)	Amount (3)	BUDGETED SALES Quantity (4)	Mill Net (5)	Amount (6)	Current Month Sales at Budgeted Mill Nets (7)	Profit Increase or (Decrease) Due to Mill Nets (8)	Current Months Sales at Budgeted Mix and Mill Net (9)	Increase or (Decrease) In Sales Due to Switch (10)	Budgeted Gross Profit Margin (11)	Increase or (Decrease) In Gross Profit (12)
Product A	709.1	$118.40	$ 83,959	516.7	$116.03	$ 59,953	$ 82,277	$1,682	$ 53,682	$28,595	40.0%	$11,438
B	68.8	80.44	5,534	500.0	73.31	36,655	5,044	490	32,821	(27,777)	31.1	(8,639)
C	54.2	84.43	4,576	16.7	77.12	1,288	4,180	396	1,153	3,027	36.9	1,117
D	20.7	81.45	1,686	35.0	83.05	2,907	1,719	(33)	2,603	(884)	35.7	(316)
E	22.1	124.71	2,756	17.2	125.00	2,150	2,763	(7)	1,925	838	30.3	254
F	85.9	48.35	4,153	85.4	48.00	4,099	4,123	30	3,670	453	35.0	159
G	20.3	55.02	1,117	20.0	55.02	1,100	1,117	.....	985	132	38.6	51
H	.....	.....	.....	66.7	73.40	4,896	.....	.....	4,384	(4,384)	29.0	(1,271)
TOTALS	981.1		$103,781	1257.7		$113,048	$101,223	$2,558	$101,223	—0—	36.1	$2,793

1. Assume that gross profit has increased $1,082, although volume has obviously decreased.
2. Assume that *all* costs are variable and that there has been no change in inventories, therefore the change in gross profit is due entirely to sales factors.
3. Calculate the effect that sales factors have had upon profit, as follows:

Volume

(a) determine the variances between actual vs. budgeted sales	$ 9,267	unfavorable
(b) adjust to account for the effect of mill nets upon this variance if mill nets had not been favorable sales decrease would have been	2,558	favorable
	$11,825	adjusted unfavorable decrease in sales
(c) multiply by the budgeted gross profit margin	36.1%	
.effect of decreased volume on gross profit	$ 4,269	unfavorable

Mill Nets

Calculated by multiplying current commodity sales (Column 1) by the budgeted mill nets (Column 5) and comparing the result with the total sales (Column 3), variances shown in Column 8.

Commodity Mix

Calculated by spreading total current sales at budgeted mill nets (Column 7) on total budgeted sales (Column 6) and multiplying the resulting factor times the various commodity budgeted sales (Column 6) to arrive at the resulting current sales if actual sales had been sold in the same proportions as projected in the budget (Column 9). Compare these sales values with the current commodity sales valued at budgeted mill nets (Column 7) to arrive at the results of selling proportionately more or less than budgeted, as shown in Column 10. The effect of the proportionate sales switches upon gross profit may now be determined by applying the commodity budgeted gross profit margins to the commodity variances detailed in Column 10.

Summary

Although decreased volume has unfavorably affected gross profit in the amount of $4,269, gross profit has increased over budget by $1,082 as a result of obtaining more favorable mill nets ($2,558) and selling proportionately more products carrying higher gross profit margins ($2,793).

EXHIBIT D

COST & MANAGEMENT

ANALYSIS OF CONTROLLABLE VARIANCES

INDUSTRY C

ACTUAL vs. BUDGET

	Plant 6	Plant 7	Plant 8
Raw Material Usage	($6,948)	$4,235	$1,555
Direct Labour	(4,649)	1,961	644
General Labour	(590)	2,340	(104)
Foreman Labour	(69)	(85)	(103)
Power	(489)	(387)	(711)
Fuel—Propane	(1,524)	(349)	(774)
Fuel—Oil	(1,198)		(835)
Supplies	(524)	(1,547)	(454)
Cartons	31	(152)	(303)
Felts	722	766	204
Water	(650)	(230)	(42)
Shipping	(378)	(257)	(142)
Miscellaneous Expense	(1,136)	(682)	(570)
Repair Labour	348	(589)	576
Transfer Loss		119	
Waste	(3,574)	3,391	(2,108)
Finished Goods Inventory Adjustment	(7)	(2,041)	(453)
Inventory Adjustments	(222)	(18)	10
Defective Material	(554)	(207)	(68)
Miscellaneous Adjustments			
Total Cont. Variance	($21,411)	$6,268	($3,678)

EXHIBIT E

A variation due to volume usually highlights one or more of several factors such as lack of orders, change in production speeds, downtime resulting from machine "breaks" or inefficiencies, waste, strikes among many others. The factors affecting volume are so basically vital that a well organized analytical programme must be established in order to focus the attention of the personnel responsible upon any significant variation from the budget that reflects their operating plans.

Sales nets are projected in the budget for each principal commodity at each plant. These nets are determined by deducting anticipated freight to reach projected markets from the base selling prices for the budget period. Variations thus indicate success or failure to sell in the markets budgeted in the event base selling prices remain unchanged.

Sales mixture control provides a rather provocative challenge to many organizations competing in to-day's market, for its effect on gross profit is only vaguely measured in many instances. There has taken place, in recent decades, a definite and determined trend on the part of many organizations to product diversification and it is consistent with current efforts for efficient managerial control to measure accurately the effect that commodity mix has upon gross profit and return on investment. This type of revelation is mandatory to intelligent and well conceived sales policies and administration. So very little has been written, in the past, concerning this vitally important factor to the con-

trol of sales, that I have included a separate detailed analysis in Exhibit D to assist in highlighting the effect of sales mixture on profit. In the case of concerns selling numerous products, it is no longer feasible nor adequate to control sales simply by controlling volume. In the illustration outlined on Exhibit D we see an organization reporting an increase in profit although volume has decreased to a relatively large degree. This illustration excludes cost and inventory factors for the sake of simplicity of presentation and emphasizes the impact of commodity mix on sales and gross profit. In many industries to-day, if the reverse were true, that is, if volume had increased but a profit decrease had been reported, due to the effect of sales mixture, the controller might find himself at a loss to accurately explain what had occurred.

Cost Variances

The analysis will report, in addition to sales variations, the effect on profit of selected cost variances as shown in Exhibit B:

(a) raw material prices
(b) overtime premium
(c) fixed costs, repairs, other non-controllable costs and adjustments
(d) controllable costs at the plant level

Basic policy decisions often result from an analysis of the price variances on raw materials. Significant changes in cost are often reflected in such a variance as a result of a change in the source of supply of the materials, constructive action can often be taken to correct such a condition. The case sometimes develops that courses of action planned in establishing the budget but neglected in actual operation are highlighted in reporting such variances. A follow-up usually will rectify a failure to comply with properly developed programming.

The budget allows sufficient overtime to meet budgeted production schedules; however many factors may occur that will reflect variations from budget. Unusual machine efficiency, machine speeds, absences, change in anticipated volume, etc. normally will cause a variance from standard and, if significant, warrants further analysis to isolate the cause and course of action to bring performance into line.

Fixed costs, repairs, other non-controllable costs and adjustments are non-controllable elements, at the plant level, and only significant variations from budget are analyzed further than indicated on Exhibit C.

The most concentrated and developed analysis included in the report to management is centered upon the variances from standard of the controllable costs at the plant level, the non-controllable costs having been isolated in Exhibit C. Operating variations of all sorts are developed in this analysis and they are presented in considerable detail in this monthly resume of plant operations. Standard, in this company

case, is synonymous with budget since the standards are reviewed each six months and form the basis of the semi-annual budgeted costs. Exhibit E isolates the variances from standard of the controllable cost elements. A typical presentation of an analysis of Plant 6 follows:

Gross Profit Analysis

Gross Profit—unfavorable		($45,719)
Sales variations		
Volume—unfavorable	($18,859)	
Sales decrease of 34.6% amounting to $71,709, after adjusting for mill nets, at a margin of 26.3% resulted in this variance. The reduced shipments during the month were the result of unusually high dealer inventories brought about in anticipation of last quarter's special sales campaign.		
Mill nets—favorable	1,394	
A slightly improved distribution pattern was realized during the month due to increased activity within a fifty mile radius of the plant.		
Commodity Mix—unfavorable	(1,558)	
Proportionately more sales of Product A at a margin of 27% and proportionately less of Product B at a margin of 31%.		
Profit decrease due to sales factors		($19,023)
All Non-Controllable Variances and Adjustments—unfavorable		(5,285)
Reader's note—this variance is the result of subtracting the favorable adjustment on line 18 from the total non-controllable adjustments on line 13, Exhibit C.		
Controllable Cost Variations		
Raw Material usage—unfavorable	(6,948)	
An increase in the weight of material per unit amounting to 12 pounds is accountable for this variance. During the startup period following the installation of redesigned rollers and dies, the plant encountered		

some difficulties attributable to this equipment. Corrective action necessitated "dumping" much material. Satisfactory progress was achieved after the first week and standard performance is anticipated for the remainder of the budget period.

Direct Labour—unfavorable ..... (4,649)
Reduced machine efficiency of 4% from standard amounting to $905 and absorption of the crews for one and one half days while the machine was idle costing $1,440 were attributable to machine changes called for in Work Order No. 240. The balance of this variance reflects time utilized to repackage 35 units of Product A as a customer service.

Fuel Usage—unfavorable ..... (2,722)
Due to the unseasonably cold weather requiring increased space heating.

Waste—unfavorable ..... (3,574)
Sub standard recovery was experienced as a result of one poor startup performance after equipment changes.

Water—unfavorable ..... (650)
This variance is due to the purchase of city water to supplement the short supply encountered from our present river line. We have presently in progress a work order which will provide a new river line to overcome this undesirable situation.

Miscellaneous Expense and Supplies—unfavorable ..... (1,660)
Due to the purchase of unusually large quantities of selected chemicals in anticipation of the scheduled price increases for these items.

Other—unfavorable	(1,208)	
Covers all other variances not significant enough for further detail.		
Profit decreases due to Controllable Cost factors		($21,411)
Total decrease in gross profit—Plant 6		($45,719)

Conclusion

This presentation of the effect of operations upon costs and profit, it must be remembered, has been developed and specifically designed to meet the objective of familiarizing and informing *top* management people with regard to monthly performance vs. monthly budgeted operations. Imperative to the success of any standard cost and budgetary control programme is the timeliness of reporting so that appropriate action may be undertaken as required. Integral to, and not precluded by the above presentation, are daily and weekly reports to plant and middle management people concerning these prospective variations from the plan adopted for the budget period as a result of decisions and policies developed by management.

Since the budget has been described as a plan of action . . . , the financial expression of management's co-ordinated plan for operating the business during the period covered, this company has chosen the gross profit analysis, as outlined above.

FOR FURTHER READING

REPORTS TO TOP MANAGEMENT, by J. D. Edward, The Accounting Review, Jan. 1957.

REPORTS TO MANAGEMENT, N.A.C.A. Bulletin, Sept. 1955.

QUICKER REPORTS THROUGH COST PLANNING AND CONTROL, by H. C. Greer, N.A.C.A. Bulletin, July 1956.

THE CONTROLLER'S FUNCTION IN TOP-LEVEL MANAGEMENT, by G A. Welsh, Journal of Accountancy, July 1954.

Student Section . . .

EXAMINATIONS, 1956

ADVANCED COST ACCOUNTING—PAPER II

Comments by Geo. Moller, D. Jur., C.A., R.I.A.

QUESTION II (12 marks)

The Experimental Company is in an industry where product competition is very keen, and in order to retain its share of the market the firm must continually be experimenting with, and investigating, new processes and products. To record the costs of such research, the firm has established a project cost system for its research laboratory.

The general principle governing the cost procedure is that it should satisfy the requirements of management and conform to sound costing practice (that total laboratory costs be absorbed by active projects) without being so exhaustive in specific costing as to be overly expensive. As a result, the following principles of distribution are followed:

(1) The laboratory is organized on the basis of sections, each section supervising a number of projects.

(2) Indirect labour is accumulated by sections and classified as to technical or non-technical.

(3) The cost of materials, supplies, and equipment are charged to laboratory overhead.

(4) Laboratory overhead is distributed to sections on the basis of the percentage of manpower in each to the total manpower in the laboratory.

(5) Each section's share of the laboratory overhead is distributed to technical and non-technical costs on the basis of total direct labour hours in the section.

(6) The cost of a project is determined by the application of sectional technical and non-technical direct labour hourly rates.

The total cost of running the laboratory as shown by the general ledger is $295,500.

From the payroll tabulation the following hours and costs are obtained:

DIRECT LABOUR

1.	2.	3.	4.	5.
	Technical		Non-Technical	
Section	Hours	Cost	Hours	Cost
10	1,000	$ 4,000	500	$ 1,000
20	5,000	17,500	10,000	24,000
30	4,000	10,500	8,000	18,000

40	700	2,800	6,300	17,500
50	4,000	16,000	2,000	6,000
		50,800		66,500

INDIRECT LABOUR

Section	6. Technical Cost	7. Non-Technical Cost
10	$ 1,200	$ 200
20	6,000	4,000
30	4,000	3,000
40	1,000	2,800
50	5,000	1,000
	17,200	11,000

Personnel in the laboratory are distributed as follows:

Section	Personnel
10	15
20	105
30	81
40	78
50	21
	300

REQUIRED:

Compute the cost of the following projects, showing all stages of your computations:

Sec.	Proj.	Title	Direct Labour Hours Tech.	Non Tech.	Total
10	1051	Development of waxing processes	50.5	25.1	75.6
20	2052	Decolorization studies	175.2	80.2	255.4
30	3053	Crude light products	80.1	40.1	120.2
40	4054	Crude lube products	55.3	20.1	75.4
50	5055	Motor gas ignition quality	300.0	100.0	400.0

SOLUTION II.

Computation of Lab. Overhead:

Balance per General Ledger		$295,500.
Less:		
Project Labour Technical	$ 50,800.	
Non- Technical	66,500.	(117,300.)
Indirect Labour Technical	17,200.	
Non-Technical	11,000.	(28,200.)
		$150,000.

Distribution of Lab. O/H.

Section	Manpower	%age	Lab. O/H.
10	15	5	7,500.
20	105	35	52,500.
30	81	27	40,500.
40	78	26	39,000.
50	21	7	10,500.
	300	100	150,000.

Distribution of Section O/H.

Section	Total Hours	Tech. Hrs.	Cost	Non. Tech. Hrs.	Cost
10	1,500.	66⅔	$ 5,000.	33⅓	$ 2,500.
20	15,000.	33⅓	17,500.	66⅔	35,000.
30	12,000.	33⅓	13,500.	66⅔	27,000.
40	7,000.	10	3,900.	90	35,100.
50	6,000.	66⅔	7,000.	33⅓	3,500.
			$46,900.		$103,100.

Computation of Hourly Rates:

A: Technical:

Section	10	20	30	40	50	Total
Direct Labour	4,000	17,500	10,500	2,800	16,000	50,800
Indirect Labour	1,200	6,000	4,000	1,000	5,000	17,200
Section O/H.	5,000	17,500	13,500	3,900	7,000	46,900
Total Sect. Costs	10,200	41,000	28,000	7,700	28,000	114,900
D. L. Hours	1,000	5,000	4,000	700	4,000	
Hourly Rate	10.20	8.20	7.00	11.00	7.00	

B: Non-Technical.

Section	10	20	30	40	50	Total
Direct Labour	1,000	24,000	18,000	17,500	6,000	66,500
Indirect Labour	200	4,000	3,000	2,800	1,000	11,000
Section O/H	2,500	35,000	27,000	35,100	3,500	103,100
Total Sec. Costs	3,700	63,000	48,000	55,400	10,500	180,600
D.L. Hours	500	10,000	8,000	6,300	2,000	
Hourly Rate	7.40	6.30	6.00	8.80	5.25	

Reconciliation:

Total Technical Costs	114,900
Total Non-Technical Costs	180,600
Total Lab. Costs per G.L.	295,500

Computation of Project Costs:

Sec.	Project	Tech. Hrs.	Rate	Cost (Tech)	Non-Tech Hrs.	Rate	Cost (Non-Tech)	Total Cost
10	1051	50.5	x $10.20	$515.10	25.1	$7.40	$185.74	$700.84
20	2052	175.2	x 8.20	1436.64	80.2	6.30	505.26	1,941.90
30	3053	80.1	x 7.00	560.70	40.1	6.00	240.60	801.30
40	4054	55.3	x 11.00	608.30	20.1	8.80	176.88	785.18
50	5055	300.0	x 7.00	2100.00	100.0	5.25	525.00	2,625.00

COMMENT:

This question was intended to test how well the students have mastered the principles of distributing costs, and of establishing and applying hourly rates: 35% of all students obtained 10 or more out of possible 12 marks; 25 perfect solutions of this question were submitted.

On the other hand, many students showed that this kind of problem—which has to be understood by anyone who wants to call himself a Cost Accountant—was confusing to them.

Although the text clearly stated that the General Ledger balance of $295,500 was the "total cost of running laboratory", several students distributed this whole amount as overhead, considering Direct and Indirect labour as additional costs. Points had to be deducted for this basic error; if the correct distribution technique was used otherwise, though, marks were awarded accordingly.

65% of all available marks were awarded for the solutions submitted.